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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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LAW OFFICE OF MARK J. SPOLYAR
2200 CESAR CHAVEZ STREET
SUITE 8
SAN FRANCISCO, CA 94124

EXAMINER	
ADDY, ANTHONY S	

ART UNIT	PAPER NUMBER
2617	

DATE MAILED: 12/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/783,186	FRIDAY ET AL.	
	Examiner	Art Unit	
	Anthony S. Addy	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 October 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *9-23* is/are allowed.

6)☒ Claim(s) *1-8 and 24-35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to applicant's amendment filed on October 02, 2006. **Claims** 1-20 are pending in the present application.

Response to Arguments

2. Applicant's arguments with respect to **claims 1-20** filed on October 02, 2006 have been fully considered but they are not persuasive.

In response to applicant's argument that, "Sharony in view of Molteni fails to teach or suggest a radio transceiver that has a plurality of directional antennas (page 14, second and third paragraphs of the response)," by arguing that, Sharony merely uses the plural form of "antenna" for proper grammar to specify that either AP20 or AP30 can utilize a directional antenna or both can utilize directional antennas (see page 14, second paragraph of the response), examiner respectfully disagrees and maintains that Sharony meets the limitations as claimed. Examiner reiterates that Sharony explicitly teaches ***either*** or both AP 20 and the AP 30 use directional antennas, which clearly shows that ***either*** AP 20 and the AP 30 use directional antennas (i.e. a plurality of directional antennas) (see p. 3 [0027]).

In response to applicant's argument that, "Palm fails to teach or suggest access points (transceivers) with multiple directional antennas (see page 18, first paragraph of the response)," by arguing that, Palm's access points (206) each have two antennas – a directional antenna (404) and an antenna (402) whose type is not identified (see page 18, first paragraph of the response), examiner respectfully disagrees and maintains that

Palm meets the limitations as claimed. Examiner reiterates that Palm explicitly teaches a plurality of wireless access points (WAPs 206A & 206B) having directional antennas (i.e. a plurality of directional antennas) and the air controller 326 directs the WAPs 206A & 206B to alter the gain pattern of ***their*** directional ***antennas*** (see abstract, p. 3 [0038-0039]), which clearly indicates that WAPs 206A & 206B include multiple directional antennas.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the motivation for making the combination is clearly found in Molteni as set forth in the Office Action, i.e. in order to identify an antenna of an access point by its unique identifier called the Service Set Identifier (SSID) for the wireless network of the access point to aid in calculating the location of a wireless node in a wireless environment with a high precision (see p. 2 [0029], p. 6 [0105], p. 7 [0110 & 0117] and p. 12 [0186 & 0194]).

In view of the above the rejections using Sharony, Molteni and Palm are proper and are maintained as repeated below. These rejections are made **FINAL**.

Claim Rejections - 35 USC § 102

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1-8 and 29-35 are rejected under 35 U.S.C. 102(e) as being anticipated by **Sharony, U.S. Publication Number 2005/0113090 A1 (hereinafter Sharony)**.

Regarding claims 1, 29 and 35, Sharony discloses in a wireless node location mechanism comprising a plurality of radio transceivers operative to detect the signal strength of signals transmitted by wireless nodes (see abstract, p. 1 [0008], p. 3 [0024-0025] and Fig. 1; shows a plurality of wireless access points, AP's 10-30 [i.e. reads on a plurality of radio transceivers]); wherein at least one of the radio transceivers comprises a plurality of directional antennas (see p. 3 [0027]), a method comprising detecting, at one or more of the plurality of radio transceivers, the signal strength of RF signals transmitted by a wireless node (see p. 3 [0025-0028]); as to the infrastructure radio transceivers comprising a plurality of directional antennas, detecting the strength of the RF signals transduced by at least one of the plurality of directional antennas (see p. 3 [0027]); and computing the estimated location of the wireless node using at least some of the signal strengths of the RF signals detected by the infrastructure radios, and knowledge of the antennas used to detect the signal strengths of the RF signals (see p. 3 [0027-0029]).

Regarding claims 2 and 30, Sharony discloses all the limitations of claims 1 and 29. In addition, Sharony discloses a method wherein the computing step comprises

identifying the directional antennas associated with the signal strengths to be used in locating the wireless node (see p. 3 [0027]); selecting aspects of an RF physical model associated with the identified directional antennas (see p. 2 [0021-0022 & Calibration Table] and p. 3 [0027-0029]); computing the estimated location of the wireless node using the signal strengths of the RF signals detected by the infrastructure radios, and the selected aspects of the physical model (see p. 2 [0021-0022 & Calibration Table] and p. 3 [0027-0029]).

Regarding claims 3 and 31, Sharony discloses all the limitations of claims 2 and 30. In addition, Sharony discloses a method wherein the aspects of the RF physical model are coverage maps corresponding to respective antennas, wherein at least one of the antennas is a directional antenna (see p. 2 [0022 & Calibration Table] and p. 3 [0027-0029]).

Regarding claims 4 and 32, Sharony discloses all the limitations of claims 3 and 31. In addition, Sharony discloses a method wherein the coverage maps each comprise a plurality of location coordinates associated with corresponding signal strength values (see p. 2 [0022 & Calibration Table] and p. 3 [0027-0029]).

Regarding claims 5 and 33, Sharony discloses all the limitations of claims 4 and 32. In addition, Sharony discloses a method wherein the coverage maps are heuristically constructed (see p. 2 [0022 & Calibration Table] and p. 3 [0027-0029][i.e. it is inherent the coverage maps are heuristically constructed since Sharony teaches calibration of a physical map overlay of the AP's 10-30 in combination with their

respective RSSI data are accomplished by placing a computing device at a number of particular locations within the WLAN 100]).

Regarding claims 6 and 34, Sharony discloses all the limitations of claims 4 and 32. In addition, Sharony discloses a method wherein the coverage maps are based on a mathematical model (see p. 2 [0022 & Calibration Table] and p. 3 [0027-0029][i.e. it is inherent the coverage maps are based on a mathematical model since Sharony teaches calibration of a physical map overlay of the AP's 10-30 in combination with their respective RSSI data are accomplished by placing a computing device at a number of particular locations within the WLAN 100]).

Regarding claim 7, Sharony discloses an apparatus facilitating the location of a wireless node in an RF environment (see abstract and p. 3 [0024-0025]), comprising a plurality of radio transceivers comprising at least one antenna (see abstract, p. 1 [0008], p. 3 [0024-0025 & 0027] and Fig. 1; shows a plurality of wireless access points, AP's 10-30 [i.e. reads on a plurality of radio transceivers]), the plurality of radio transceivers operative to detect the strength of signals transmitted by wireless nodes and provide the detected signal strengths to a wireless node location model (see p. 3 [0025-0028] [i.e. wireless access points, AP's 10-30 detect the strength of signals transmitted by rogue AP 60 and provide the detected signal strengths to a server 70 (i.e. reads on a wireless node location model)]); wherein at least one of the radio transceivers comprises at least two directional antennas, and is operative to identify the directional antenna associated with the detected signal strength for a given signal (see p. 3 [0027]); a wireless node location model operative to compute the estimated location of a wireless node based on

the antennas identified by one or more of the radio transceivers, and the strength of signals transmitted by the wireless node as detected by a plurality of radio transceivers (see p. 3 [0027-0029]).

Regarding claim 8, Sharony discloses all the limitations of claim 7. In addition, Sharony discloses wherein the wireless node location model comprise a plurality of coverage maps corresponding to the antennas associated with the plurality of radio transceivers, the coverage maps including signal strength values for different locations in a physical region (see p. 2 [0022 & Calibration Table] and p. 3 [0027-0029]).

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Sharony, U.S. Publication Number 2005/0113090 A1 (hereinafter Sharony)** and further in view of **Molteni et al., U.S. Publication Number 2004/0066757 A1 (hereinafter Molteni)**.

Regarding claim 26, Sharony teaches a wireless network system facilitating the location of a wireless node (see abstract and Fig. 1), comprising a plurality of radio transceivers for communication with a wireless node location module (see p. 1 [0008], p. 3 [0024-0025] and Fig. 1; shows a plurality of wireless access points, AP's 10-30 [i.e. reads on a plurality of radio transceivers] communicating with server 70 [i.e. reads on a wireless node location module]); wherein the radio transceivers are each operative to

detect the strength of received signals encoding frames transmitted by wireless nodes (see p. 3 [0025-0028] [i.e. wireless access points, AP's 10-30 detect the strength of signals transmitted by rogue AP]); append a signal strength value to frames received from the wireless nodes (see p. 2 [0015-0018] and p. 3 [0024-0025] [i.e. the limitation "append a signal strength value to frames received from the wireless nodes" is met by the teaching of Sharony that the wireless access points, AP's 10-30 continually receive and compile corresponding RSSI data for rogue AP 60 continually transmitting beacon signals and the beacon signal contain information including a MAC address to identify the transmitting AP]); and transmit received frames to a wireless node location module (see p. 3 [0025-0028] [i.e. wireless access points, AP's 10-30 detect the strength of received beacon signals transmitted by rogue AP 60 and transmits the RSSI data to a server 70 (i.e. reads on a wireless node location module)]); wherein at least one of the radio transceivers comprises a plurality of directional antennas, and is further operative to: select one from the plurality of the directional antennas to receive the frames in received signals (see p. 3 [0027]); a wireless node location module operative to store signal strength data transmitted by the plurality of radio transceivers in association with wireless node identifiers (see p. 1 [0008] and p. 3 [0024-0025]); and compute the estimated location of a wireless node based on the antennas identified by at least one of the radio transceivers, and the signal strength values detected by the access elements (see p. 3 [0027-0029]).

Sharony fails to explicitly teach append an identifier corresponding to the selected antenna to the frames received from the wireless nodes.

In an analogous field of endeavor, Molteni teaches appending a signal strength value received from wireless nodes (see abstract, p. 2 [0029], p. 6 [0105], p. 7 [0110 & 0117] and p. 12 [0186 & 0194] [i.e. the L3 information in the L2 frame received from the AP of the wireless network, a time stamp of when the L2 frame was received from the AP, and an indication of the signal strength of the L2 frame from the AP and note that the L2 frame from the AP (access point) contains an indication of the signal strength value, hence a signal strength value is appended to the frames transmitted by the access point (selected antenna)]).

It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to modify Sharony with Molteni to append an identifier corresponding to the selected antenna to the frames received from the wireless nodes, in order to identify an antenna of an access point by its unique identifier called the Service Set Identifier (SSID) for the wireless network of the access point to aid in calculating the location of a wireless node in a wireless environment with a high precision.

Regarding claim 27, Sharony in view of Molteni teaches all the limitations of claim 26. Molteni further teaches, wherein the frames are 802.11 frames (see p. 3 [0056]).

Regarding claim 28, Sharony in view of Molteni teaches all the limitations of claim 27. Sharony further teaches, wherein the wireless node identifiers are MAC addresses (see p. 2 [0015]).

7. Claims 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Palm et al., U.S. Publication Number 2005/0068925 A1 (hereinafter Palm)** and further in view of **Molteni et al., U.S. Publication Number 2004/0066757 A1 (hereinafter Molteni)**.

Regarding claim 24, Palm teaches in a wireless network system comprising a plurality of radio transceivers, at least some of which comprise a plurality of directional antennas (see abstract, p. 3 [0038] and Fig. 3), wherein the peak gains of the antennas are offset relative to each other (see p. 4 [0047-0048] and Figs. 6A & 6B), a method comprising detecting, at one of the radio transceivers, a signal transduced by one of the directional antennas, wherein the signal transmits a wireless frame (see p. 5 [0054]), the wireless frame including a preamble; during receipt of the preamble of the frame, selecting one from the plurality of the antennas based on at least one attribute of the respective signals transduced by the antennas (see p. 4[0044] and p. 7 [0071 & 0072]); switching to the selected antenna for receipt of the remainder of the frame (see p. 4[0044] and p. 7 [0071 & 0072]).

Palm fails to explicitly teach appending the detected signal strength and an identifier for the selected antenna to the frame; and transmitting the frame to a wireless node location module.

In an analogous field of endeavor, Molteni teaches appending a signal strength value received from wireless nodes (see abstract, p. 2 [0029], p. 6 [0105], p. 7 [0110 & 0117] and p. 12 [0186 & 0194] [i.e. the L3 information in the L2 frame received from the AP of the wireless network, a time stamp of when the L2 frame was received from the

AP, and an indication of the signal strength of the L2 frame from the AP and note that the L2 frame from the AP (access point) contains an indication of the signal strength value, hence a signal strength value is appended to the frames transmitted by the access point (selected antenna)]).

It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to modify Palm with Molteni to include a method of appending the detected signal strength and an identifier for the selected antenna to the frame; and transmitting the frame to a wireless node location module, in order to identify an antenna of an access point by its unique identifier called the Service Set Identifier (SSID) for the wireless network of the access point to aid in calculating the location of a wireless node in a wireless environment with a high precision.

Regarding claim 25, Palm in view of Molteni teaches all the limitations of claim 24. The combination of Palm and Molteni fails to explicitly teach repeating the detecting, selecting, switching, appending and transmitting steps for a desired number of radio transceivers; and computing the estimated location of a wireless node based on the antenna identifiers and signal strength values appended to the frames transmitted by the wireless node as detected by the radio transceivers. However, one of ordinary skill in the art further recognizes that it would have been obvious to repeat the steps as taught by Palm and Molteni as addressed in claim 24, in order to calculate the location of a wireless node in a wireless environment with a high precision.

Allowable Subject Matter

8. Claims 9-23 are allowed.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony S. Addy whose telephone number is 571-272-7795. The examiner can normally be reached on Mon-Thur 8:00am-6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duc M. Nguyen can be reached on 571-272-7503. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A.S.A

DUC M. NGUYEN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600